

CLAIMS

1. An oil pump comprising a pump body having a hollow portion on an end face thereof; a pump cover, the inner end face of the pump cover connected to the end face of the pump body so as to cover the hollow portion and to form a gear compartment therebetween; a driving gear driven by a driving shaft in the gear compartment; a rotatable driven gear disposed in the gear compartment and driven by the driving gear that meshes with the driven gear; a discharge port adjacent to the body and a discharge port adjacent to the cover formed in the bottom of the hollow portion of the pump body and the inner end face of the pump cover, respectively, in a discharge area of working spaces formed by the engagement of the driving gear and the driven gear; a notch adjacent to the body extending from the front end of the discharge port adjacent to the body to the rear end of the discharge area of the working spaces at the bottom of the hollow portion of the pump body; and a notch adjacent to the cover extending from the front end of the discharge port adjacent to the cover to the rear end of the discharge area of the working spaces at the inner end face of the pump cover, one of the pump body and the pump cover comprising cast iron and the other comprising a light alloy, characterized in that

the length of the notch formed in the pump body or the pump cover comprising the light alloy is longer than that of the notch formed in the pump body or the pump cover comprising the cast iron; and

bubbles generated in working oil in the working spaces during the high-speed rotation of the driving gear are crushed by the high-pressure working oil flowing back to the working spaces through the longer notch adjacent to the inner surface of the pump body or the pump cover comprising the cast iron facing the working spaces.

2. The oil pump according to Claim 1, wherein

the driven gear is a rotatable internal gear having the outer circumference supported by the inner circumference of the gear compartment;

the driving gear is an external gear meshing with the driven gear;

the discharge port adjacent to the body and the discharge port adjacent to the cover are each arc; and

the notch adjacent to the body and the notch adjacent to the cover extend from the front ends of the discharge port adjacent to the body and the discharge port adjacent to the cover, respectively, in the circumference direction to the rear end of the discharge area of the working spaces.

3. The oil pump according to Claim 1 or 2, wherein
the notch formed in the pump body or the pump cover
comprising the light alloy has an approximately triangular
shape and a width decreasing from the front end of the
discharge port adjacent to the cover toward the rear end of
the discharge area of the working spaces.

4. The oil pump according to any one of Claims 1 to 3,
wherein

the notch formed in the pump body or the pump cover
comprising the light alloy has an inclined bottom so as to
reduce the depth from the front end of the discharge port
adjacent to the cover toward the rear end of the discharge
area of the working spaces.

5. An automatic transmission having a supply source of
hydraulic pressure, wherein

the supply source of the hydraulic pressure is the oil
pump according to any one of Claims 1 to 4; and

the pump body or the pump cover comprising the light
alloy is integrated with a housing of the automatic
transmission.